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Risk Management. Defining and assessing risks

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(Article begins on next page)



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**DIPARTIMENTO DI
ECONOMIA AZIENDALE**

INTERNATIONAL CONFERENCE

**BUSINESS POLICIES AND STRATEGIES IN A GLOBAL MARKET
A FRAMEWORK FOR SMEs. CASES AND STUDIES**

Turin, November 14th 2002

Faculty of Economics
Corso Unione Sovietica, 218 bis



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**FACULDADE DE ECONOMIA
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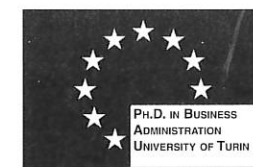
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Faculty of Economics
University of Turin

ISASUT
International School of Advanced Study University of Turin

International Business Department
California State Polytechnic University - Pomona - CA

University of Porto
Faculty of Economics
Department of Business Management

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Prof. Enrico Predazzi - Vice President Isasut
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Dr. Rebecca Pera - University of Turin
Dr. Fabrizio Traversa - University of Turin

PREFACE

The initiative aims to promote and encourage a parallel at an international level between the managerial strategies and policies developed in a global context by European and American medium and small enterprises. The contributions of experts, enterprises and people who study these topics want to increase training and knowledge from a European and transnational point of view.

This project is justified and is prompted by the interest shown by scholars and students for the issues referred to the strategies of development used by the medium-small enterprises in an extremely dynamic context. A second reason can be found in the possibility of a comparison from a spacial, international and multidisciplinary perspective.

Giuseppe Tardivo

*Ph.D. Director in Business Administration
University of Turin*

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RISK MANAGEMENT. DEFINING AND ASSESSING RISKS.

Anna Claudia Pellicelli

Associate Professor of Business Management,
University of Eastern Piedmont

1. Risk management. Defining and assessing risks. 2. The benefits of managing risk. 3. Growing importance. 4. The level of acceptable risk. 5. Assessing risk. 6. Strategic and operational risk. 7. Implementing the assessment.

Key words: Risk assessment, risk management, risk management system (RMS), Risk measurement.

Abstract

Business is inherently risky. For a particular firm and project, selection of the appropriate strategy will depend on such critical factors as the firm's size and scope, the external forces that could affect the viability of the business model; the nature of the target market; the source of finance; the quality of information for decision making, etc.. But businesses have to live with these uncertainties. Without them, the company cannot make profits. Risk applies to any management decision that could have a good or bad outcome. It follows that most management projects and decisions contain risk. The risk analysis helps company to understand their risks and to manage them professionally to gain a competitive advantage. A risk management system (RMS) ensures that the company manages its threats in a proactive, coordinated, cost-effective and prioritized way.

1. Risk management. Defining and assessing risks.

Business is inherently risky. For a particular firm and project, selection of the appropriate strategy will depend on such critical factors as the firm's size and scope, the external forces that could affect the viability of the business model; the nature of the target market; the source of finance; the quality of information for decision making, etc.. But businesses have to live with these uncertainties. Without them, the company cannot make profits. Risk applies to any management decision that could have a good or

bad outcome. It follows that most management projects and decisions contain risk. The risk analysis helps company to understand their risks and to manage them professionally to gain a competitive advantage.

Hazard is anything that can go wrong or cause harm (whether a trailing wire, toxic chemicals or excessive borrowing).

Risk is the chance that the hazard will cause a problem. It depends on how the hazard is controlled, and how vulnerable the company is to it.

Risk assessment is defining what can go wrong.

Risk management is taking steps to control the risks.

Risk applies to any management decision that could have a good or bad outcome. It follows that most management projects and decisions contain risk.

Risk is a future event which results from actions taken now. Uncertainty is the boundary between an action taken and an action not taken, while risk represents the prospect that the action taken will yield a less than desirable outcome¹. That is why managers should consider different options for any problem, and evaluate the consequences. It is easy to focus on obvious risks, such as workplace accidents, but the company must be alert to the big or unexpected risks.

There are two types of business risk. The first and more traditional type, is *non-entrepreneurial risk*, typically fire, pollution or fraud. Companies used to protect themselves by buying insurance but insurance is only one way to protect the company. The second type is *entrepreneurial risk*. This happens when a company builds a new plant, launches a new product or buys a company. If the company gets its forecasts wrong, it loses money.

A Price Waterhouse/BIS survey showed that 35 per cent of firms which suffer a computer disaster lose over £250000, due to inability to take orders, process work or issue invoices. The costs of other risks are equally: each kind of uncontrolled risk results in financial loss.

That makes risk an important management topic. By examining the risks in a new contract or market, companies can reduce their chances of failure, beat the competition and increase their profit, managing risk as a system.

A risk management system (RMS) ensures that the company manages its threats in a proactive, coordinated, cost-effective and prioritized way.

1. L.M.Branscomb, P.E. Auerswald (2001) *Taking technical risks* Mit Press pg.45.

Environment is the risk that companies consider to be most critical (bad publicity, customer disfavour and defection), but are also important other risks as: political risks, international trading, security, marketing risk, fire, Health, safety, business interruption (from fire or explosion) and others.

All *kinds of organizations* face risk. Small companies are often more vulnerable to risk, since a disaster at a single-site company could leave the business with no production facilities. On the other hand, scale also brings its own problems. A multi-national business has more complex financial arrangements and more processes, making it difficult for any individual to effectively manage risk.

Some firms have developed formal systems for risk evaluation as a means for ensuring that risk and reward are in appropriate balance.

The importance of different risks changes over *time*. New legislation, the economy, trends in the market and world events jostle for management's attention.

We are entering the third age of risk management. In the *first age* business considered only non-entrepreneurial risk (such as security). They also used risk reactively or defensively, to see how much insurance they should buy.

In the *second age* of risk management, companies treated risk in a more proactive way. They recognized that they could reduce the risk of pollution or fire by introducing new policies and practices. For example, launching a no-smoking policy reduces the risk of fire. This second age was often instigated by insurance companies who were tired of paying money to poorly managed businesses. It was also fostered by the European Union which wanted management to think about the risk it posed to workers and customers.

In the *third age* management, companies are assessing their entrepreneurial risk. These companies are managing risk as a system, seeking to understand how risks affect their business and manage them in a way that improves performance. In the late 1980s the environment became one of the most important items on the management agenda. By the mid-1990s, it had taken its rightful place as one of many risks that companies have to manage.

Risk management can be adapted to meet the needs of each business. It can be used to educate staff, and to give them a deeper understanding of the corporate risks. This turns managers into business people, and makes the business more effective.

2. The benefits of managing risk.

Risk analysis also helps management to avoid cost and decide which risks are worth pursuing and which should be shunned. Risk applies to all businesses, but some are more likely than others to benefit from formal risk assessment. Risk management is particularly necessary to a business which has a number of different sites, a size that precludes any individual knowing the details of every threat, a business with overseas operations, a range of processes, many sub-contractors, or suppliers or other business associates who are not under the direct control of the business, old sites with buildings, equipment or work practices dating from times².

The benefits of risk management are not easy to quantify. Losses are often kept by different departments and classified in ways that makes comparison difficult, but a unified set of information will help the business see how much is currently being lost and whether investment in risk management serves to reduce losses.

Companies without a risk management strategy are more likely to suffer the costs of problems and crises. There are the costs of mopping up after a pollution incident, playing to settle an industrial accident or the cost of recalling faulty products.

To make risk management work, the benefits may need to be explained to managers and staff. The corporate advantages are clear, but there are also advantages to the workforce. Staff who are aware of risks can prevent them from happening, and can manage them better if they materialize. The most obvious example is fire drills. Staff who have practiced a fire drill are less likely to be hurt in a fire. The same applies to other areas of risk, especially those which affect the individual whether health and safety or kidnap and ransom.

3. Growing importance.

Several factors have conspired to make insurance and passive deterrents inadequate. The main factors are the changes taking place in legislation, insurance, customers, shareholders, the public and management.

Legislation. The European Union (EU) has published 338 pieces of legislation on environmental topics and requires companies to carry out risk assessment in health and safety, product liability and finance. In many countries company directors can be gaoled for corporate offences, and fines can be high. Risk assessment is growing more common in many areas of legislation.

2. K. Sadgrove (1997) *The complete guide to business risk management* Gower.

Insurance. Insurers are putting up premiums for many categories of risk, so insurance is no longer the cheap option it once was. Insurance may not recoup the full amount lost due to exclusion clauses and pay-outs are slow. Open-ended cover is no longer widely available (it is difficult to get insurance for environmental pollution which develops over a period of years, as long-term pollution of watercourse). Insurance cannot pay for loss of goodwill and reputation.

Customers. Many examples have occurred of faulty healthcare products which have harmed consumers. This litigation has often been unsuccessful, but they caused bad publicity. Many companies look for evidence of risk management in their suppliers, i.e. in the form of quality system.

Shareholders are more aware of risk. They are seeking more information in the annual report about the company's exposure to risk, because it will directly affect the company's future profits.

The public. It is especially critical of pollution, dangerous products and corporate fraud. This attitude encourages companies to avoid risking the public's hostility.

Management. Highly publicized disasters have shown management that risks are a damaging, and sometimes fatal, cost to the business and that preventing catastrophe is better than trying to cure it. Firms have had to learn how to manage their increasingly international operations. Governments all over the world are withdrawing from the management of national enterprises, such as transportation, healthcare and energy. This means that private enterprises are now running high risk businesses, and the government will not pay the costs of catastrophe.

4. The level of acceptable risk.

The level of acceptable risk depends on the reward. The greater the risk, the greater the reward must be to make it worth while. The best business opportunity is one where the reward is high and the risk low. A risk greater than the reward is not worth pursuing, while projects that carry low risk and low reward rarely make any impact on the business.

Companies can affect the level of reward and risk. An oil company would want a greater return on investment from exploring in an unstable country. To achieve this it might negotiate tax concessions and investment subsidies to achieve that aim before starting operations there.

Lack of planning or precautions can lead to ultimate disaster. At the other end of the scale, excessive caution leads to missed opportunities and rises prevention costs. The middle course, involving a proper assessment of risks, maximizes the company's profit. This demonstrates that the

purpose of risk management is not to preclude entrepreneurial flair, but to ensure that it is properly guided

As the company becomes aware of the need to manage corporate risk, it starts to invest money in prevention. This includes the cost of audits, the cost of preventative maintenance, the salary of a quality manager and so on. As the prevention costs grow, the number of incidents falls, and so do their costs. As a result, total costs also fall. It can continue to invest more money in prevention, but doing so the total costs are the same as they were before the company started managing its risks.

There is an optimum level of investment to be made in risk management. Too great an investment will burden the company with costs and render it uncompetitive, while insufficient attention to risk will make it liable for heavy incident costs.

5. Assessing risk.

Risk management starts with *awareness*. Management recognizes that risks exist in business, and that these should be managed. Once aware of the risks, there are four further stages in risk management.

The first stage is to *assess* the risks. Physical risks like fire involve physical audits, while strategic risks (such as marketing ones) are more likely to involve research and analysis. Both types of assessment require access to records. How many days have been lost through accidents? What cases of fire have been reported? These records will point to trends, and indicate management omissions or poor working practices.

Every type of risk has its own assessment. The company should use a standard methodology for carrying out assessments of each kind of risk. In other words, all fire surveys should use the same method. This ensures that the data can be compared overtime, and it helps management more easily evaluate the risks.

Some firms limit their risk assessment to those which the business can resolve. No risks should be excluded simply because of the firm's resources or because management feels the risk cannot be resolved. Staff who participate in such an assessment are implicitly condoning some risks by accepting that they cannot be managed, and this is likely to affect their entitlement to compensation if the risk materializes.

Thorough assessment includes *measurement*. This allows the company to analyse trends, and to make decisions based on fact not opinion.

The second stage is to *set priorities*. The company has to determine which risks should have the highest priority and the assessment should have identified which hazards carry the greatest risk.

The third stage is to *prevent* the risks from happening. (transferring, spreading or substituting hazardous elements).

The final stage is to **plan** for the worst. If disaster happens, the company needs to be able to rescue itself, and having plans will minimize the scale of the problem. The cost of the plans should be proportionate to the risk: no business can avoid risk completely.

The company should create an emergency plan to cover all probable eventualities.

6. Strategic and operational risk.

There are two levels of risk: strategic and operational. The *strategic risks* are the issues which require companies to think on a grand scale. These risks should be tackled at board level and require strategic planning. Operational risks require board involvement, but are implemented at a lower level.

The first strategic risk is *government action* (for example economic change or new legislation). Companies operate in an increasingly regulated world, and government plans (both at home and abroad) need to be forecast. The risk of adverse consequences through political actions in a country in which a company has made significant investments, is dependent on a significant volume of business or has entered into an agreement with a counterparty subject to the laws of that country³.

Customers also bring strategic risk. Their changing attitudes and expectations makes them less predictable than before. Customer loyalties are increasing fleeting in the new economy because customers have more choices than ever before, and this trend is expected to continue in future.

There is increased customer demand for faster delivery or turn around on products and services and the company doesn't recognize it until it is too late.

The third strategic risk is *competition*. Actions of competitors or new entrants to the market impair the firm's competitive advantage or even threaten its ability to survive. Any market, especially one which is profitable, will attract competition sooner rather than later. Superior competitor performance in the marketplace (in terms of superior quality, low cost provider capability, or faster response time) will also result in loss of competitive advantage. Finally, new technology is bringing new threats and opportunities. If managed properly, it can make the company more competitive; if ignored, it can bring new competitors into the market.

3. e.g. possible nationalization, expropriation of assets without compensation, other restrictions could result in significant losses of the company.

Today, *technological innovation* is probably the biggest single driver of change. It can give significant competitive advantage to the innovating company in an industry, but also could radically change the balance of travel in today's industries. Technological changes may obsolete products or production techniques, and even business models. They are sources of competitive disadvantage in cost and product performance or both.

There is in many companies an implicit assumption that is better to be a quick follower than a pioneer. This belief rests on two assumptions. The first assumption is that the pioneering role is inherently risky. The second premise is that the pioneer will, inevitably, stumble, creating an opportunity for an alert follower to snatch away the prize of the new market.

Many companies are not as creative as they might be in seeking out ways to contain the risk of pioneering, and many underestimate the equal or greater risks of failing to lead. The risk that matters most companies is financial risk: the risk that a large, irrevocable investment fails to produce the intended revenues and profits; creativity in leveraging scarce resources can help a company minimize the risks of pioneering new competitive space.

The follower lets the impetuous pioneer take the risk that the timing is not right, or the product isn't sufficiently well-developed, or customers don't really need or want the new service. But being first carries a risk of failure disproportionate to the rewards of leadership only when the pioneering firms permits its financial commitment to race ahead of its understanding of the precise nature of emerging opportunity.

Involving key customers early on in the development phase, by regularly testing emerging product concepts and prototypes with employees and with customers in small-scale market experiments, by sharing investment risks with alliance partners. Usually what isn't ready is the product in that it was too expensive, too difficult to use, to unreliable, or lacking in some other dimension of performance⁴.

Understanding the market can be as important for managing technical risk as understanding the technology. Where market knowledge is deep, technical risk is easier to manage, because knowing what the product specifications have to be, you will know when the technology will not support them, in order to stop at least temporarily. Halting a project that is doomed to disappointment is a key element of risk management.

These strategic risks all have a major impact on the company's costs, prices, products and sales. Some of the solutions which companies bring to bear are: empowerment, quality management, customer care, investment, innovation and cost reduction.

4. G. Hamel, C.K. Prahalad (1994) *Competing for the future* Harvard Business School Press p.312.

Management has to grasp these four strategic issues before it can start to consider the operational risks that affect the company. In addition, management must ensure that the company is in the right markets and is not exposed to fundamental risks.

Operational risks are the risks that operations are inefficient and ineffective in executing the firm's business model, satisfying customers and achieving the firm's quality, cost and time performance objectives. *They can be categorized according to when they occur* (time). Some occur at suppliers: interruption of supplies or poor quality supplies, others at the point of production: fire, pollution, fraud, computers, accidents, labour disputes, terrorism, kidnap and ransom. Others in the distribution chain (tampering, counterfeiting) or when the product is consumed (payment problems, changing needs, product liability). Operational risks can also be categorized *by cause*: natural disaster, government action, economic forces, suppliers, customers, production problems, theft and fraud, vandalism and revenge. It is useful to examine the causes of risk and to see which assets they will affect: land, buildings, plant and equipment, raw materials, stock, vehicles, documents, cash, computers, sales, customers, staff, local residents. This helps the company to decide which assets are vulnerable, and how they should be protected.

Another definition is based on classification of risks into three family: *environment risk, process risk and information for decision making risk*.

*Environment risks*⁵. They arise when there are external forces that could affect the viability of the enterprise's business model: political and legal risk, competitor risk, customer wants risk, technological innovation risk, but also others as follows:

sensitivity risk: overcommitment of resources and expected future cash flows reduces the company's tolerance for changes in environmental forces that are totally beyond its control (interest rates, market demand..).

Capital availability risk: insufficient access to capital threatens the firm's capacity to grow, execute its business model and generate future financial returns.

Financial markets risk: movement in prices, rates, indices could affect the value of the firm's financial assets and stock price, which may also affect its cost of capital and/or its ability to raise capital.

Shareholder relations risk: a decline in investor confidence reduce its capacity to sustain share valuation.

Industry risk: changes in opportunities and threats, capabilities of competitors and other conditions might reduce attractiveness of the industry.

5. B.C. Field *Environmental economics* Mc Grow Hill 1994 p.129.

Catastrophic loss risk. There are two sources of losses: uncontrollable (war, fire, terrorism, etc..) and controllable (fraud). The inability to recover from disasters could damage the company's reputation.

The risk matrix approach as applied by Shell Chemicals U.K. introduces Environmental risk into the model of portfolio analysis and considers environmental risk as a separate axis in the model. The logic is that the risk from environmental forces affecting a business area may not be easily integrated into "business-sector-prospects" axis because it involves a very different type of analysis. The risk position is based on the seriousness of environmental threats and the probability of their occurrence. The inclusion of the environmental-risk dimension allows the baseline strategy recommendations to be adjusted for the risk factor⁶.

This analysis has looked at treats to human health and life. But the same applies to other species. Water-borne pollution can quickly flow down a river, killing fish for many miles; while a major pollution incident may affect a whole continent (as the nuclear example above showed). Even when it affects only a bay (as with Exxon Valdez), it can shock the whole nation who see it on their television screens.

Process risk. It arises when the firm's business processes are not effectively managing, disposing the assets of the business or they are poorly aligned with strategies or aren't creating value. Process risks can be classified into five issues: operations, financial, empowerment, I.T., integrity. Operations risk: is the risk that operations are inefficient and ineffective, as when the company's ability to meet customer expectation is reduced by a lack of focus on customers. It includes: customer satisfaction risk, human resources risk, knowledge capital risk, product development risk, efficiency risk, capacity risk, performance gap risk, cycle time risk, sourcing risk, channel effectiveness risk, partnering risk, compliance risk, business interruption, product failure, health and safety risk, environmental risk, trademark/brand erosion risk.

Financial risk: is the risk that cash flows and financial risks are not managed cost-effectively to (a) maximize cash availability, (b) reduce uncertainty of currency, interest rate, credit and other financial risks, or (c) move cash funds quickly and without loss of value to wherever they are needed most. They include price risks (interest rate, currency exchange, equity, commodity pricing, etc.), liquidity (concentration, opportunity cost, cash flow) and credit (default, settlement, concentration).

6. S.Q. Robinson, R.E. Hichens, P.P. Wade *The directional policy matrix tool for strategic planning* Long Range Planning 11, april 1978.

Empowerment risk: is the risk that managers and employees are not properly led. It includes risks as leadership, outsourcing, performance measures of incentives, communications.

Information processing/technology risk: is the risk that the information technology used in the firm isn't operated as intended.

Integrity risk: is the risk of management fraud, illegal or unauthorized acts, reputation risk.

Information for decision making risk. It is the risk that information used to support the execution of the business model isn't reliable, shared in process/operational information, business reporting and strategic information.

7. Implementing the assessment.

Each kind of risk has its own *assessment methodology*. But there are common themes, as follows:

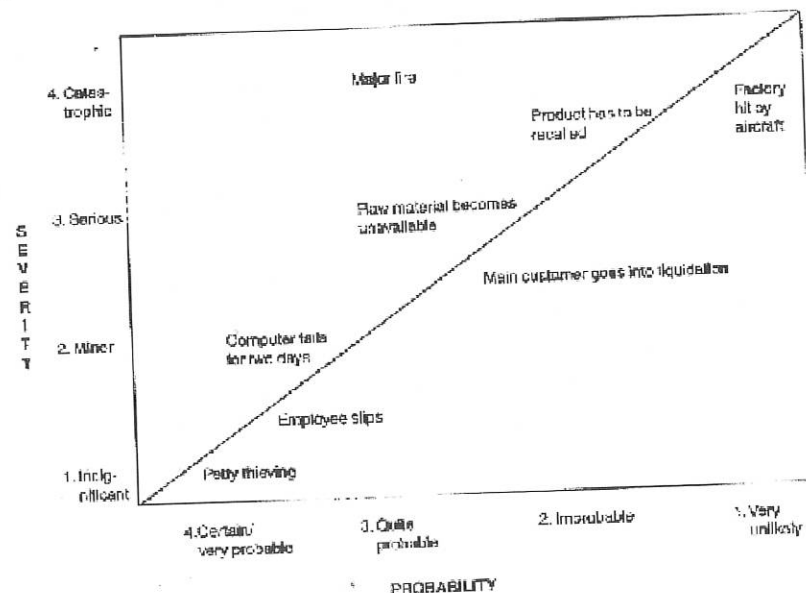
- Purpose of the assignment. It's important to understand why is the assessment being undertaken, what will happen as a result of the assessment and how will it help the company.
- Nature of the risk The project or hazard needs to be described and then classified. It might be technical, management, customer, political, financial, competitor, or political. It might be a continuous or catastrophic risk; other questions are: is the risk present at all times, only occasionally or at specific times? Is the hazard one of human making (such as an explosion at a chemical plant) or natural (such as an earthquake)? How predictable is the risk? Is it internal (under our control) or external (beyond our control)? Are there comparable examples in other industries or countries? What is the attitude of interested parties (such as the local or national government, opinion formers, local residents, employees and trade unions)? What is the view of experts in the field? What trust does the company place on the opinion of the experts? What level of competence do staff have?
- Resources. The auditor should determine what resources will be affected and what is the scale of asset at risk. Some risks affect finance, while others affect people, categorized as staff, customers, visitors, local residents, the trade: distributors and retailers, legislators, and pressure groups. People could be affected in several ways: through disease, or through being burnt. The resource might be static or mobile; control and risk monitoring are more difficult for mobile risks, and they therefore need to be managed differently.

The scale of the impact. The auditor should determine what effect would an accident have on the company, what is the scale of the disaster applying an impact rating to any risk. A four point scale (insignificant, minor,

serious and catastrophic) as in figure 1 is an example. Probability and severity are two important factors in *measuring risk*. Companies suffer small problems frequently, and major problems rarely. The more severe the event, the less probable it usually is.

Some risks are low in severity and happen a lot, such as a worker slipping in the rain. Minor accidents are common in construction and, while unfortunate, they do not bring the building site to a halt. These risks are very probable but have an insignificant impact, and are in the bottom left-hand corner of Figure 1. Because they are common, the company should seek to reduce them, but usually cause little loss.

Figure 1. Risk severity and probability².



Catastrophic events, such as deaths resulting from an aircraft hitting the head office, very rarely occur. Such extremely improbable risks are located in the top right-hand corner of the chart. Since the probability is very low, there is not point in trying to manage the risk. But some catastrophic events happen frequently, such as fire. Fire in a textile plant is both quite probable and catastrophic, so management should spare no effort to manage the threat.

It is worth compiling a chart similar to Figure 1. This will help the company to prioritize its risk management program. Risks should be

prioritized in order from top left of the grid to bottom right. A risk which has a high impact and is probable should be tackled urgently. There is no point in protecting the business against risks in the bottom right-hand corner of the grid. These are events which are unlikely to happen and will not be serious. However, if the company has many of these risks, they may add up to a serious problem. By multiplying the probability factor by the severity, the assessor can quantify the importance of the risk, and give it an appropriate level of protection. In Figure 1, the impact would rate as $1 \times 4 = 4$, while the risk of a major fire would be $3 \times 4 = 12$.

Fatalities could be instant or delayed. The effects of an accident may have a great potential on opinion formers, pressure groups and on the company's image (introducing a hazardous new product might cause public sector purchasers to stop buying other products from the company).

The risk might harm the future generations as in the case of radioactive materials being released. New developments are inherently risky: it may be less risky for an oil company to drill in a new geographic area than to explore for gas (if it has no experience of this) in an existing oil field.

- **Benefits.** The hazard under review could bring benefits to the company (especially in terms of profit), its workers (from wages), the surrounding population (indirect employment).
- **Risk management strategy.** Once the company has identified its risks it should take action to minimize them. It's important to evaluate the cost of the mitigating factors (as for example building fire walls or installing alarms) and their effect on the scale of the risk. Risk management includes six elements: the right corporate strategy, managing people, managing processes, spreading the risk, monitoring the risk, insuring against the risk.

The corporate strategy assures the company to operate in the right markets offering the right products and to be able to plan its future, rather than rely. Management must be ready to act quickly to changing circumstances and must be given responsibility for managing the risks within the areas of their responsibility. Staff must understand the kind of risks in the business and know how to manage them: if staff feel that risk is something managed by an expert, they will not take ownership of it. Top management must be involved in setting business policy on risk.

As some processes are more hazardous than others, the company should seek to replace high risk processes with lower risk ones. Companies can draw flow charts or fishbone diagrams showing processes and the movement of material through the business, to determine points of vulnerability.

Solutions could be transferring responsibility to their suppliers by requiring them to be responsible for product quality and safety or developing new technologies which could coexist with their present ones, or by selling related products.

Monitoring the risk include taking measurements to see where the company is vulnerable, keeping documentation, auditing in order to ensure that risks are identified and managed, having an early warning system.

Insurance against the risk is part of the contingency plan; having put in place risk management procedures, companies should seek a reduction or stabilization of insurance premiums.

- Contingency plans. This issues is useful to evaluate the organization's ability to deal with the accident.
- Limitations. Some areas could be inaccessible limiting the assesment.
- The final section of assessment will include decisions taken, and actions ordered. It may also include a date for a review.

The company has to identify and asses risks, set policies, take action, and monitor the risk. Properly used, risk management helps a company to evaluate its strengths and weaknesses. It can help the business to re-engineer itself⁷.

A risk management system (RMS) ensures that the company manages its threats in a proactive, coordinated, cost-effective and prioritized way.

7. Hamel and Prahalad suggest a recipe for derisking the ambition included in the new frame of strategy: ambition means setting a stretching aspiration and then using the tools of resource leverage to derisk that ambition. G.Hamel, C.K. Prahalad, 1994 p.251.

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